Commodity Highlight: Fresh-market Sweet Corn

U.S. consumption of fresh-market sweet corn (also known as corn-on-the-cob), has been trending higher over the past decade. Per capita use reached a record high in 2004 on the strength of improved quality, sweeter varieties, and value-added packaging. Backed by this strong demand, rising production and higher shipping-point prices pushed U.S. average crop value up 70 percent between 1992-1994 and 2002-04 to $560 million.

In the United States, sweet corn is produced for three distinct markets--fresh, canning, and freezing. Production within these markets is largely independent of each other. The canning market is the largest in terms of total acreage and production (accounting for 37 percent of each), while the fresh market accounts for the majority (two-thirds) of total sweet corn crop value.

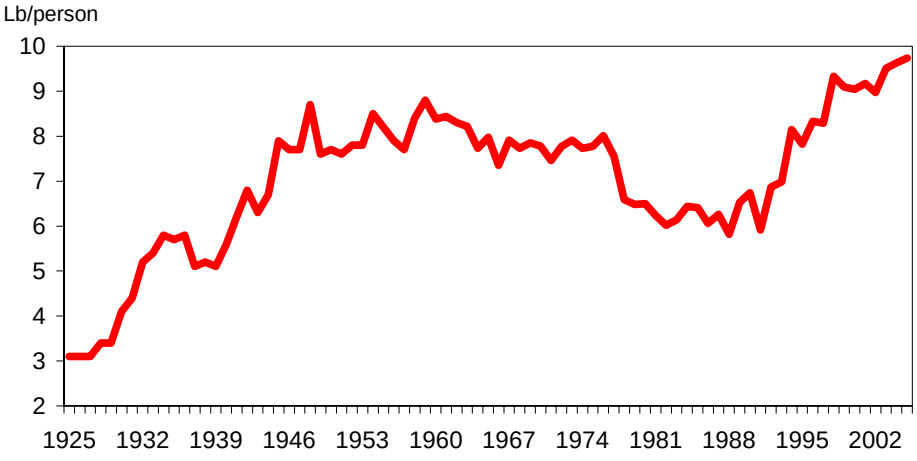
Sweet corn is one of several types of corn, which also includes flint corn, dent corn (yellow and white), popcorn, flour corn, and pod corn. Sweet corn is a member of the Gramineae (grass) family (as are wheat, barley, and rice) and a native of tropical Americas. It is a subspecies of the genus Zea (species mays) that has been a staple crop in Central and South America for thousands of years. Sweet corn is actually a genetic mutation of field (dent) corn and was reportedly first grown in Pennsylvania in the mid-1700s, with the first commercial variety introduced there in 1779. The natural mutation in sweet corn causes the kernel to store more sugars than field corn. Sweet corn is harvested before it matures, while the sugar content is still high. Most varieties of sweet corn feature kernels that are yellow (most popular), white, or bicolor (a combination resulting from cross-pollination). Although there may be regional consumer preferences for corn color, sweetness is not related to color.

The United States is Top Producer

According to the Food and Agriculture Organization of the United Nations, the United States is the world's leading producer of sweet corn (fresh and processing), accounting for 46 percent of output during 2002-04. Nigeria (7 percent), France (6 percent), Hungary (6 percent), and Peru (4 percent) round out the top five producing nations. Among the top nations, production expansion since 1992-94 (largely for

Figure 16

Fresh-market sweet corn: U.S. per capita disappearance, 1925-2005



Source: Economic Research Service, USDA.

For more information on sweet corn, refer to the following links:

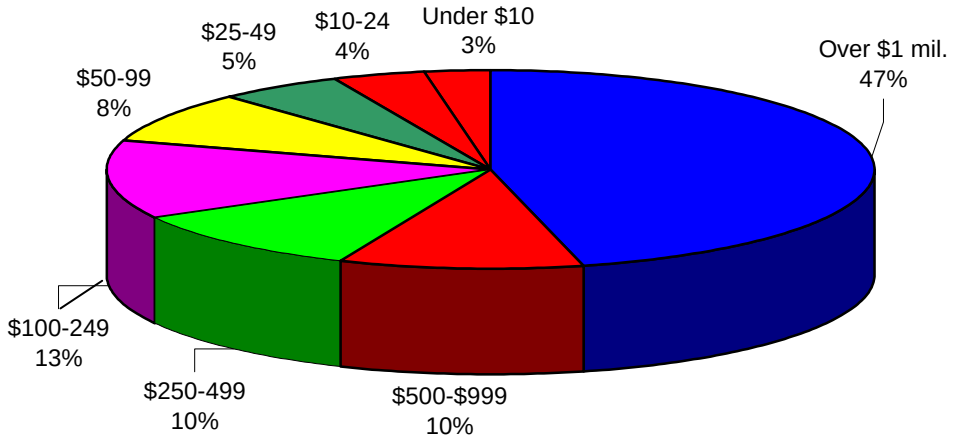
http://www.ers.usda.gov/data/sdp/view.asp?f=crops/sweet-corn/

http://www.ers.usda.gov/publications/AgOutlook/aug2001/AO283e.pdf

http://usda.mannlib.cornell.edu/data-sets/specialty/89011/

Figure 17

U.S. fresh-market sweet corn: Share of acreage by farm sales class



1/ Sales class legends are in $1,000. Source: 2002 Census of Agriculture, NASS, USDA.

processing) has been strongest in Hungary and Peru. The United States is also the leading exporter of sweet corn, shipping two-thirds of the combined fresh, canned, and frozen sweet corn products worldwide.

Sweet corn is one of the few crops produced in every State (Alaska has one farm with sweet corn). According to the 2002 Census of Agriculture, 18,412 farms produce sweet corn for the fresh market in the United States, with another 4,061 farms harvesting for processed products. About 47 percent of fresh-market acreage is harvested on operations with total farm sales (all products) of $1 million or more and another 10 percent is on farms with between $500,000 and $999,999 in farm product sales (figure 17). About one-third of fresh-market sweet corn is harvested by farms with less than $250,000 in total agricultural product sales.

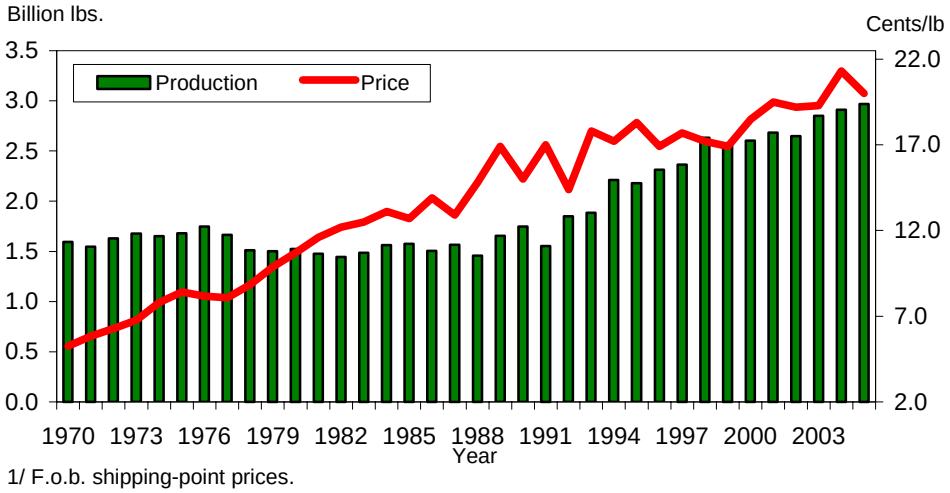
In 2004, U.S. area harvested for fresh-market sweet corn totaled 246,200 acres—second only to the 2003 record high. However, production was a record-high 2.91 billion pounds in 2004, as per-acre yield set a record high. During 2002-2004, Florida remained the leading producer of fresh-market sweet corn with 21 percent of the U.S. crop. California (19 percent), New York (12 percent), and Georgia (11 percent) are also leading producers. While fresh-market sweet corn production has risen 15 percent in Florida between 1992-94 and 2002-04, output has trended much higher in California (up 93 percent), Georgia (up 147 percent), and New York (65 percent). Sweet corn for processing is grown primarily in Wisconsin, Minnesota, Washington, and Oregon.

Production of fresh-market sweet corn is highly seasonal, reflecting past production trends and consumption habits. Peak volume occurs during July, with 60 percent of total market volume moving during May-August. Although shipments peak around July 4, movement is also strong around the Memorial Day holiday—typically the start of the summer picnic and vacation season.

Movement during the winter quarter (January-March) accounts for only about 10 percent of annual volume, with the majority supplied by Florida and supplemented by imports from Mexico. Increased winter movement during the 1990s largely reflects both better marketing (largely pre-packaged ears of corn) and the adoption of newer varieties with longer shelf life. These so-called “supersweet” varieties

Figure 18

U.S. fresh-market sweet corn: Production and season-average price 1/



1/ F.o.b. shipping-point prices.
Source: NASS, USDA except 2005 forecast by ERS.

Table 14--U.S. fresh-market sweet corn: Production in selected States

Item	2000	2001	2002	2003	2004	Change 2003-04
			----- 1,000 cwt -----			Percent
Florida	5,610	5,306	5,712	5,626	5,999	7
California	3,960	3,740	4,550	5,415	5,880	9
Georgia	3,360	3,250	3,125	2,800	3,645	30
New York	2,613	3,841	3,278	4,094	2,800	-32
Pennsylvania	964	701	696	1,166	1,392	19
Ohio	1,302	1,309	1,253	1,474	1,285	-13
Michigan	742	540	800	855	713	-17
North Carolina	810	861	729	820	675	-18
Others	6,666	7,267	6,337	6,253	6,721	7
United States	26,027	26,815	26,480	28,503	29,110	2

Source: National Agricultural Statistics Service, USDA.

have proven popular with consumers and retailers and have helped further expand the domestic market by fostering off-season demand. Because the sugar content of the supersweet varieties is maintained longer, sweet corn can be more easily shipped long distances, while maintaining peak marketability.

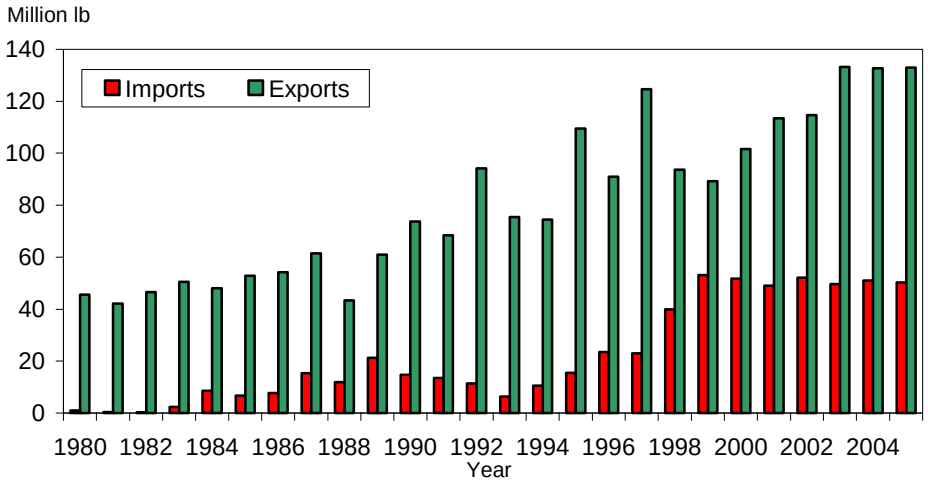
Inflation-Adjusted Prices Steady

Most fresh sweet corn is priced on the daily spot market. The canning and freezing corn markets feature contract pricing between growers and processors almost exclusively. The season-average shipping-point price for fresh sweet corn reached a record-high 21.3 cents per pound ($21.30 per cwt) in 2004. However, after adjusting for inflation, the season-average price received by growers in 2004 was not much different than in 1994, 1984, or the 1960s. Although retail prices are not reported by the government for sweet corn, according to the 1999 A.C. Nielsen Homescan database, fresh-market sweet corn averaged $0.86 per pound and had a retail value (excludes foodservice use) of $237 million.

Despite recent increases in production and imports during the cooler months of the year, price patterns have been constant for the past two decades. Prices begin to

Figure 19

U.S. fresh-market sweet corn: Calendar year trade volume, 1980-2005



Source: Bureau of the Census, USDC except 2005 forecast by ERS.

decline in March before falling off sharply in April when production in central Florida begins to flow to market. Prices continue to decline through the seasonal low in June before July 4 holiday demand slightly increases average prices. As supplies become available from more States during the summer, prices settle at low levels through September. Then as cool weather and frost ends production in all but Southern States, prices climb and fluctuate through the end of the year.

Fresh Trade Remains Relatively Small

World trade has traditionally been a minor part of the U.S. fresh sweet corn market. The United States leads the world in sweet corn exports and is a net exporter of fresh sweet corn, shipping twice the volume imported. During 2002-04, the United States exported 4 percent of production while importing less than 2 percent of the fresh sweet corn consumed domestically. With the strong dollar, higher consumption of fresh vegetables, and lower (or phased out) import tariffs, import volume averaged 437 percent higher than during 1992-94. Import volume appears to have stabilized at about 50 million pounds over the first half of this decade. Mexico provided 95 percent of fresh sweet corn imports during 2002-04, with the majority arriving during the winter (December through April).

On the export side, growth has begun to pick up this decade after slow growth during the 1980s and unsteady gains during the second half of the 1990s. Export volume during 2002-04 averaged 56 percent above the 1992-94 average. Canada received 79 percent of exports during 2002-04, with South Korea a distant second at 15 percent. The majority of exports occurs between April and July (before the Canadian crop is harvested in the summer), with volume peaking in May and June.

Demand Trending Higher

Since bottoming out in 1991, fresh-market sweet corn demand has trended higher due largely to improved quality, consistency, and marketability. Domestic disappearance (use) of fresh-market sweet corn averaged 2.7 billion pounds annually during 2002-04—up 43 percent from 1992-94. In fact, use of sweet corn

has been trending higher since the early 1920s. Per capita use of fresh-market sweet corn trended up from the early 1920s to the late 1940s before flattening out at around 8 pounds into the mid-1970s. Demand then began to wane and bottomed out at about 6 pounds in the mid-1980s as inconsistent quality, increased away-from-home eating, and the desire for more convenient foods chipped away at demand.

Meanwhile, demand for frozen sweet corn accelerated in the 1980s and into the 1990s as consumers found frozen corn faster and more convenient to prepare (especially in the microwave). Frozen corn also held important advantages in consistent quality and taste. The fresh sweet corn industry responded to this challenge in the late 1980s and 1990s. Shippers began offering convenience and "curb appeal" in the form of tray-pack corn. At the same time, seed companies released new supersweet hybrids that dramatically boosted quality. During 2002-04, per capita disappearance of fresh sweet corn averaged 9.4 pounds—up 28 percent since 1992-94 and the highest since records began in 1919.

According to USDA's 1994-96 Continuing Survey of Food Intakes by Individuals, fresh sweet corn, like most other foods, is largely purchased at retail for home consumption (87 percent). The small percentage used in foodservice may largely reflect the difficulty and labor intensity of handling and preparing fresh sweet corn in a restaurant environment. Labor is the single largest expense in most foodservice operations and that alone heavily favors the use of prepared frozen and canned corn products. Most fresh-market corn-on-the cob is boiled, steamed, baked, or grilled on the cob.

Regionally, people in the Northeast and Midwest eat more fresh-market sweet corn than do consumers in other areas of the country. Northeasterners consume twice as much per capita as do people in the West. Lower sweet corn consumption in the West may reflect both the influence of the Hispanic population (who eat fresh sweet corn sparingly) and the West's status as the national leader in fast food and other restaurant spending--places where sweet corn is not well represented. Preferences along racial lines indicate that 86 percent of all fresh-market sweet corn is eaten by non-Hispanic White consumers (who account for 73 percent of the population).

Table 15--U.S. fresh-market sweet corn: Estimated supply, disappearance, and price

Year	Supply			Utilization			Season-ave. price	
	Production 1/	Imports 2/	Total	Exports 2/	Domestic 3/	Per capita use	Current dollars 1/	Constant dollars 3/
	-- Million pounds --					Pounds	-- $/cwt --	
1985	1,575.4	6.8	1,582.2	52.9	1,529.3	6.41	12.70	18.22
1990	1,745.5	14.7	1,760.2	73.7	1,686.5	6.74	15.00	18.38
2000	2,602.7	51.7	2,654.4	101.7	2,552.7	9.04	18.50	18.50
2001	2,681.5	49.0	2,730.5	113.4	2,617.1	9.17	19.50	19.04
2002	2,648.0	52.1	2,700.1	114.7	2,585.4	8.97	19.20	18.45
2003	2,850.3	49.7	2,900.0	133.3	2,766.7	9.51	19.30	18.21
2004	2,911.0	51.0	2,962.0	132.8	2,829.2	9.63	21.30	19.69
2005 f	2,969.2	50.3	3,019.5	133.0	2,886.5	9.74	--	--

-- = Not available. f = ERS forecast. 1/ Source: NASS, USDA. 2/ Source: Bureau of the Census, USDC. 3/ Domestic disappearance of in-husk corn, including shrink and loss. 3/ Constant dollar prices calculated using the GDP deflator, 2000=100.